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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/593,547	06/14/2000	Jari M. Heinonen	1999-0336B-(STG182)	7891

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EXAMINER

MUNOZ, GUILLERMO

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/593,547

Applicant(s)

HEINONEN ET AL.

Examiner

Guillermo Munoz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-9 and 16-18 is/are allowed.
- 6) ☒ Claim(s) 1-4, 10-13 and 19 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 14, 15, and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Reference is made to co-pending application "Methods And Apparatus For Use In Obtaining Frequency Synchronization In An OFDM Communication System" in page 7, lines 25-27 and in page 12, lines 8-10. However, the exact co-pending application is uncertain since applicant has two identically named co-pending applications. It is suggested applicant specify which of the two co-pending applications apply.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 10-13, and 19 are rejected under 35 U.S.C. 103(a) as being obvious over Hoole in view of Alamouti et al..

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

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inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claim 1, Hoole discloses a discrete tone system, which teaches all the claimed subject matter, note column 2, line 39- column 3, line 46 and column 4, line 65- column 5, line 3, except Hoole does not specifically teach the timing adjustment of a RU's transmission as resulting from a synchronization loss.

Alamouti et al. teach the use of pilot signals to calculate delay compensation upon installation and over successive data burst for the purpose of diminishing multipath and noise effects on the phase measurements (column 26, lines 35-59).

Rakib et al. teach the use of a central unit process to prevent loss of synchronization by all remote units by altering a delay vector for the purpose of preventing a loss of data (column 31, line 35-column 32, line 67).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hoole's receiver with Alamouti et al.'s teaching of using a time average of the pilots phase over frequency measurement to calculate the delay compensation, since Alamouti et al. suggest on column 26, lines 56-57 that the result of this measurement would help minimize multipath and noise effects on the phase measurements. Furthermore, it would have been obvious to one having ordinary skill in the art to modify Hoole's receiver with the Rakib et al.'s teaching of using a central unit (base station) process to prevent a loss of synchronization, since Rakib et al. suggest on column 31, line 48 that the result of this would help prevent loss of synchronization

Regarding claim 2, Hoole further teaches the claimed subject matter "wherein... signals" in Col. 3, lines 1-6.

Regarding claim 3, Alamouti et al. further teach the claimed subject matter "wherein...based on the slope of the line" by the phase over frequency measurement in column 26, lines 56-57.

Regarding claim 4, Alamouti et al. further teach the claimed subject matter "wherein...exceeds a timing threshold" by the time average in column 26, lines 56-57.

Regarding claim 10, see claim 1 above.

Regarding claim 11, see claim 2 above.

Regarding claim 12, see claim 3 above.

Regarding claim 13, see claim 4 above.

Regarding claim 19, see claim 1 above.

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Claim Objections

Claims 5, 6, 14, 15, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

Claims 7-9 and 16-18 are allowed.

The following is an examiner's statement of reasons for allowance:

The present invention comprises a receiver, wherein a slope of a line defined by a phase-frequency relationship of a plurality of pilot signals is compared to a timing threshold. The number of times the slope of the line exceeds the timing threshold is used to determine a loss of synchronization. The closest prior art, Hoole, (US Patent Number 5,799,000) shows a similar circuit including a receiver, wherein a slope of a line defined by a phase-frequency relationship of a plurality of pilot signals is compared to a timing threshold. However, Hoole fails to teach determining a loss of synchronization based on the number of times the slope of the line exceeds the timing threshold. This distinct feature has been included in independent claims 7 and 16 rendering them allowable.

Conclusion

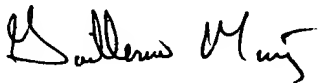
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Munoz whose telephone number is 703-305-4224.

The examiner can normally be reached on Monday-Friday 8:30a.m-4:30p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.



GM
October 17, 2003



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600